The Contents of Case 823_273_10

Qnum	Query	DB Name	Thesaurus	Operator
Q1	(6347237 or 5391543 or 5328893 or 5307068 or 5276398 or 5231078 or 4981838 or 3857114) and (324/300-322 or 505/210,700,701,866).ccls. and (333/202,204,219,246).ccls.	PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD	None	ADJ
Q2	Q1 and HTC	PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD	None	ADJ
Q3	Q1 and (high adj temperature adj superconductor)	PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD	None	ADJ
Q4	Q3 and (resonator or antenna or coil or receiver) and substrate	PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD	None	ADJ
Q5	Q4 and (dielectric or (thin adj film))	PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD	None	ADJ
Q6	Q5 and (thallium or yttrium or bismuth)	PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD	None	ADJ
Q7	(high adj temperature adj superconductor) and (resonator or antenna or coil or receiver) and ((substrate or dielectric) or (thin adj film)) and (thallium or yttrium or bismuth)	PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD	None	ADJ
Q8	Q7 and (324/300-322 or 505/210,700,701,866).ccls. and (333/202,204,219,246).ccls.	PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD	None	ADJ
Q9	Q8 and Brey	PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD	None	ADJ
Q10	Q8 and 6538445	PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD	None	ADJ

Case Operation

Update Case

Submit Cancel

Refine Search

Search Results -

Term	Documents
"6538445"	6
6538445S	0
("6538445" AND 8).PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD.	0
(L8 AND 6538445).PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD.	0

Database:
US Pre-Grant Publication Full-Text Database
US Patents Full-Text Database
US OCR Full-Text Database
EPO Abstracts Database
JPO Abstracts Database
Derwent World Patents Index
IBM Technical Disclosure Bulletins

Search: L10

Refine Search

Recall Text | Clear | Interrupt

Search History

DATE: Monday, February 27, 2006 Printable Copy Create Case

Set Name side by side	Query	Hit Count	Set Name result set
	DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=ADJ		
L10	L8 and 6538445	0	L10
L9	L8 and Brey	0	L9
L8	L7 and (324/300-322 or 505/210,700,701,866).ccls. and (333/202,204,219,246).ccls.	25	L8
L7	(high adj temperature adj superconductor) and (resonator or antenna or coil or receiver) and ((substrate or dielectric) or (thin adj film)) and (thallium or yttrium or bismuth)	479	L7
L6	L5 and (thallium or yttrium or bismuth)	10	L6

L5	L4 and (dielectric or (thin adj film))	13	L5
L4	L3 and (resonator or antenna or coil or receiver) and substrate	14	L4
L3	L1 and (high adj temperature adj superconductor)	15	L3
L2	L1 and HTC	0	L2
L1	(6347237 or 5391543 or 5328893 or 5307068 or 5276398 or 5231078 or 4981838 or 3857114) and (324/300-322 or 505/210,700,701,866).ccls. and (333/202,204,219,246).ccls.	21	L1

END OF SEARCH HISTORY

Hit List

First Hit | Clear | Generate Collection | Print | Fwd Refs | Bkwd Refs | Generate OACS

Search Results - Record(s) 1 through 21 of 21 returned.

☐ 1. Document ID: US 5484764 A Relevance Rank: 44

Using default format because multiple data bases are involved.

L1: Entry 15 of 21 File: USPT Jan 16, 1996

US-PAT-NO: 5484764
DOCUMENT-IDENTIFIER: US 5484764 A
**** See image for Certificate of Correction ****

TITLE: Plural-mode stacked resonator filter including superconductive material resonators

DATE-ISSUED: January 16, 1996

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Fiediuszko; Slawomir J.	Palo Alto	CA		
Curtis; John A.	Sunnyvale	CA		

US-CL-CURRENT: 505/210; 333/202, 333/204, 333/219, 333/99S, 505/700, 505/701, 505/866

Full | Title | Citation | Front | Review | Classification | Date | Reference | | | Claims | KWIC | Draw D

☐ 2. Document ID: US 6895262 B2 Relevance Rank: 44

L1: Entry 1 of 21 File: USPT May 17, 2005

US-PAT-NO: 6895262
DOCUMENT-IDENTIFIER: US 6895262 B2

TITLE: High temperature superconducting spiral snake structures and methods for high Q, reduced intermodulation structures

DATE-ISSUED: May 17, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Cortes; Balam Quitze Andres Willemsen	Ventura	CA		
Cardona; Albert H.	Santa Barbara	CA		

Fenzi; Neal O. Santa Barbara CA
Forse; Roger J. Santa Barbara CA

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Superconductor Technologies, Inc.	Santa Barbara	CA			02

APPL-NO: 10/167938 [PALM]
DATE FILED: June 10, 2002

PARENT-CASE:
RELATED APPLICATION This application is a continuation of application Ser. No. 09/460,274, filed Dec. 13, 1999, now issued as U.S. Pat. No. 6,424,846, which is a continuation of application Ser. No. 08/885,473, filed on Jun. 30, 1997, issued as U.S. Pat. No. 6,026,311, which is a continuation-in-part of application Ser. No. 08/826,435 (224/302), filed Mar. 20, 1997, now abandoned, which is a continuation of application Ser. No. 07/297,298, filed Aug. 26, 1994, entitled "Lumped Element Filters", issued as U.S. Pat. No. 5,616,539, which is in turn a continuation-in-part of application Ser. No. 08/070,100 filed May 28, 1993, entitled "Lumped High Temperature Superconductor Lumped Elements and Circuits Therefrom" (as amended), issued as U.S. Pat. No. 5,618,777 on Apr. 8, 1997 (now continued as application Ser. No. 08/821,239, entitled "Lumped Element Circuits", filed Mar. 20, 1997 now abandoned).

INT-CL-ISSUED: [07] H01 P 1/203, H03 H 7/01, H01 B 12/02

US-CL-ISSUED: 505/210; 505/700, 505/701, 505/866, 333/99S, 333/185, 333/219
US-CL-CURRENT: 505/210; 333/185, 333/219, 333/99S, 505/700, 505/701, 505/866

FIELD-OF-CLASSIFICATION-SEARCH: 333/995, 333/175, 333/185, 333/219, 336/200, 336/232, 336/DIG.1, 505/210, 505/700, 505/701, 505/866
See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
3925740	December 1975	Steensma	
4075591	February 1978	Haas	
4423396	December 1983	Makimoto et al.	
4578656	March 1986	Lacour et al.	
4642591	February 1987	Kobayashi	
4701727	October 1987	Wong	
4881050	November 1989	Swanson, Jr.	
4981838	January 1991	Whitehead	
4992759	February 1991	Giradeau et al.	
4999597	March 1991	Gaynor	
5023578	June 1991	Kaneko et al.	
5038105	August 1991	Codrington et al.	
5055809	October 1991	Sagawa et al.	
5057778	October 1991	Rath	

5066933	November 1991	Komeda	
5078621	January 1992	Nishikawa et al.	
5132650	July 1992	Ikeda	
5136268	August 1992	Fiedziuszko et al.	
5166621	November 1992	Codrington et al.	
5172084	December 1992	Fiedziuszko et al.	
5175518	December 1992	Swanson, Jr.	
5208213	May 1993	Ruby	
5210494	May 1993	Brunner et al.	
5212450	May 1993	Murphy-Boesch et al.	
5231078	July 1993	Riebman et al.	
5258626	November 1993	Suzuki et al.	
5291146	March 1994	Friz	
5329225	July 1994	Roshen et al.	
5336112	August 1994	Michishita et al.	
5479142	December 1995	Takahashi et al.	
5484764	January 1996	Fiediuszko et al.	
5521568	May 1996	Wu et al.	
5532656	July 1996	Yoshimura	333/185
5616538	April 1997	Hey-Shipton et al.	
5616539	April 1997	Hey-Shipton et al.	
5618777	April 1997	Hey-Shipton et al.	
5638037	June 1997	Kurisu et al.	
5679624	October 1997	Das	
5699025	December 1997	Kanoh et al.	333/177
5708404	January 1998	Kurisu et al.	
5719539	February 1998	Ishizaki et al.	
5721195	February 1998	Grothe et al.	
5780404	July 1998	Bacon et al.	
5786303	July 1998	Mansour	
5888942	March 1999	Matthaei	
5914296	June 1999	Shen	
5939958	August 1999	Grounds, III et al.	
5990765	November 1999	Mansour et al.	
5995931	November 1999	Bahl et al.	
6020799	February 2000	Ishizaki et al.	
6041245	March 2000	Mansour	
6057271	May 2000	Kenjiro et al.	
6075427	June 2000	Tai et al.	
6114931	September 2000	Gevorgian et al.	
6122533	September 2000	Zhang et al.	333/995 X
6130189	October 2000	Matthaei	
6218915	April 2001	Schallner	
6222429	April 2001	Satoh et al.	
6239674	May 2001	Enokihara et al.	
6304156	October 2001	Ishizaki et al.	
6924846	July 2002	Cortes et al.	333/995 X

2001/0025013	September 2001	Abdelmonem
2001/0038320	November 2001	Abdelmonem

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	CLASS
2629685	January 1978	DE	
0337656	October 1989	EP	
326498	November 1994	EP	
357507	March 1996	EP	
60-19301	January 1985	JP	
60-033702	February 1985	JP	
62-193302	August 1987	JP	
207015	September 1987	JP	
63-204801	August 1988	JP	
1074705	March 1989	JP	
2206201	August 1990	JP	
4-76241	December 1992	JP	
5-15055	January 1993	JP	
05029154	February 1993	JP	
5-23651	April 1993	JP	
1001716	January 2001	JP	
541263	January 1977	SU	
572865	September 1977	SU	
1224862	April 1986	SU	
1277256	December 1986	SU	
1385165	March 1988	SU	
1541690	February 1990	SU	

OTHER PUBLICATIONS

Awai, "Two-Stage Bandpass Filters Based on Rotated Excitation of Circular Dual-Mode Resonators", IEEE Microwave and Guided Wave Letters, 7, 8, Aug. 1997.
Cassinese, "High Power Handing Superconducting Planar Filters For Telecommunication Applications", International Journal Of Modern Physics B, 14, 25-27, 2000, 3092-3097.
Cassinese, et al., "Dual Mode Cross Slotted Filter Realized with Double-Sided Tl.sub.2 Ba.sub.2 CaCu.sub.2 O.sub.8 Films Grown by MOCVD", Superconductor Science and Technology 14, 6, Jun. 2001, 406-412.
Cassinese, et al., "Dual Mode Cross-Slotted Filters Realized With Superconducting Films", Appl. Phys. Lett. (USA) 77, 26, Dec. 25, 2000, 4407-4409.
Cassinese, et al., "Dual Mode Superconducting Planar Filters Based on Slotted Square Resonators", IEEE Transactions on Applied Superconductivity, 11, 1, Mar., 2001, 473-476.
Cassinese, et al., "Superconducting Planar Filters Using Dual-Mode Cross-Slotted Square Resonators", Journal of Superconductivity, 14, 1, Feb. 2001, 127-132.
Chaloupka, et al., "Superconducting Planar Disk Resonators & Filters With High Power Handling Capability", Electronic Letters, 32, 18, Aug. 29, 1996, 1735-1737.
Cohn, "Parallel Coupled Transmission Line Resonator Filters", IRE Transactions On Microwave Theory & Techniques, MTT-6, Apr. 1958, 223-231.
Cristal, et al., "Hairpin-Line & Hybrid Hairpin-Line/Half-Wave Parallel Coupled

Line Filters", IEEE Transactions On Microwave Theory & Techniques MTT-20, Nov. 1972, 719-728.
Curtis, et al., "Miniature Dual Mode Microstrip Filters", 1991 IEEE MTT-S Digest, 443-446.
Curtis, et al., "Dual Mode Microstrip Filters", Applied Microwave, Fall 1991, 86-93.
Curtis, et al., "Multi-Layered Planar Filters Based on Aperture Coupled, Dual Mode Microstrip or Stripline Resonators", IEEE MTT-S Citations from Energy Science and Technology (DOE): EDB, 1992, 1203-1206.
Dahm, et al., "Analysis & Optimization Of Intermodulation in High Tc Superconducting Microwave Filter Design", IEEE Transactions On Applied Superconductivity, 8, 4, Dec. 1998, 149-157.
Fiedziuszko. et al., "Low Loss Multiplexers with Planar Dual Mode HTS Resonators", IEEE Transactions on Microwave Theory and Techniques, 44, 7, Jul. 1996, 1248-1257.
Gibilisco, et al., Editors, Encyclopedia of Electronics, 2.sup.nd Ed, McGraw Hill Inc. Publishers, 1990, 531.
Hammond, et al., "Epitaxial Tl.sub.2 CaBa.sub.2 Cu.sub.2 O.sub.8 Thin Films With Low 9.6 GHz Surface Resistant At High Power & Above 77 K", Applied Physics Letters, 57, 8, Aug. 20, 1990, 825-827.
Hammond, "HTS 7 Cryogenics Technologies For Military Communications Systems", R&D Status Report, DABT63-97-C-0002, Sep. 1, 1996--Mar. 31, 1997.
Hammond, et al., "Superconducting Tl-Ca-Ba-Cu-O Thin Film Microstrip Resonator & Its Power Handling Performance At 77K", IEEE MTT-S Digest, 1990, 867-870.
Hejazi, "Compact Dual-Mode Filters for HTS Satellite Communication Systems", IEEE Microwave and Guided Wave Letters, 8, 8, Aug. 1998, 275-277.
Hey-Shipton Technical Hurdles For HTS Filters & Combiners For Cellular/PCM, STI Memo, Dec. 8, 1992.
Hey-Shipton, Ericsson Trip Report, STI Memo, Dec. 3, 1993.
Hong, et al., "Microstrip Bandpass Filter Using Degenerate Modes of a Novel Meander Loop Resonator", IEEE Microwave and Guided Letters, 5, 11, Nov. 1995.
Hong, et al., "Recent Advances In Microstrip Filters For Communications & Other Applications", IEE Colloquium On Advances In Passive Microwave Components, Ref. No. 1977/154, 1997, 2/1-6.
Hong, et al., "On The Development Of Superconducting Microstrip Filters For Mobile Communications Applications", IEEE Transactions On Microwave Theory & Technique, 47, 9, Sep. 1999, 1656-1663.
Hong, et al., "Design Of Highly Selective Microstrip Bandpass Filters With A Single Pair of Attentuantion Poles At Finite Frequencies", IEEE Transaction On Microwave Theory & Technique, 48, 7, Jul. 2000, 1098-1107.
Hong et al., "On The Performance Of HTS Microstrip Quasi Elliptic Function Filters For Mobile Communications Applications", IEEE Transactions On Microwave Theory & Technique, 48, 7, Jul. 2000, 1240-1246.
Hornak, et al., "Electrical Behavior of a 31-cm, Thin-Film YBaCuO Superconducting Microstrip", J. Appl. Phys., 66, 10, Nov. 15, 1989, 5066-5071.
Howe, "Stripline Circuit Design", Archtech House, Inc., 1974, 216-217.
International Search Report, in corresponding PCT/US02/16776.
Jiang, et al., "A New HTS Microwave Filter Using Dual-Mode Multi Zigzag Microstrip Loop Resonators", 1999 Asia Pacific Microwave Conference, 3, 1999, 813-816.
Kundu, "Control of Attenuation Pole Frequency of a Dual-Mode Microstrip Ring Resonator Bandpass Filter", IEEE Transactions on Microwave Theory and Techniques, 49, 6, Jun. 2001.
Kundu "Effect of External Circuit Susceptance Upon Dual-Mode Coupling of a Bandpass Filter" IEEE Microwave and Guided Wave Letters, 10, 11, Nov. 2000.
Lancaster, et al., "Miniature Superconducting Filters" IEEE Transactions On Microwave Theory & Techniques, 44, 7, Jul. 1996, 1339-1346.
Levy, "Three Wire Line Interdigital Filters Of Chebyshev and Elliptic Function Characteristic For Broad Bandwidths", Electric Letters, 2, Dec. 2, 1966, 13-14.
Liang, et al., "High Power HTS Microstrip Filters For Wireless Communication", IEEE Transactions On Microwave Theory & Techniques, 43, 12, Dec. 1995, 3020-3029.
Maas, "Volterra Series & Power Series Analysis", Nonlinear Microwave Circuits, IEEE

Press, Piscataway, JN, 1997, 155-173.
Mansour, et al., "Quasi Dual-Mode Resonators", IEEE MTT-S International Microwave Symposium Digest, 1, 2000, 183-186.
Matsuo, et al., "Dual-Mode Stepped-Impedance Ring Resonator for Bandpass Filter Applications", IEEE Transactions on Microwave Theory and Techniques, 49, 7, Jul. 2001, page #.
Matsuo, et al., "Dual-Mode Stepped-Impedance Ring Resonator for Bandpass Filter Applications", IEEE Transactions on Microwave Theory and Techniques, 49, 7, Jul. 2001.
Matthaei, et al., "Microwave Filters, Impedance Matching Networks & Coupling Structures", Archtech House Books, Dedham, Massachusetts, 1980, 497-506, 516-518.
Matthaei, et al., "High Temperature Superconducting 8.45 GHz Bandpass Filter For the Deep Space Network", 1993 IEEE Transactions On Microwave Theory and Techniques, MTT-5 International Symposium Digest, Jun. 14-18, 1993, Atlanta, Georgia, 1273-1276.
Matthaei, et al., "Novel, Staggered Resonator Array Superconducting 2.3 GHz Bandpass Filters", IEEE Transactions On Microwave Theory & Technique, 41, Dec. 1993, 2345-2352.
Matthaei, et al., "Novel Staggered Resonator Array Superconducting 2.3-GHz Bandpas Filter", 1993 MTT-S Int. Microwave Symp. Digest, paper LL-1.
Matthaei, et al., "Concerning The Use Of High Temperature Superconductivity In Planar Microwave Filters", IEEE Transactions On Microwave Theory and Techniques, 42, 7, Jul. 1994, 1287-1293.
Matthaei, et al., "Design of the HTS, Lumped Element, Manifold Type Microwave Multiplexers", IEEE Transactions On Microwave Theory & Techniques, 44, 7, Jul. 1996, 1313-1321.
Matthaei, et al., Narrow Band Filters With Zig-Zag, Hairpin Comb Resonators, International Microwave Symposium Digest, Jun. 2002, 1-4.
Meschede, et al., "On-Wafer RF Measurement Setup For The Characterization of HEMT's and High Temperature Tc Superconductors at Very Low Temperatures Down To 20 K", 1992 IEEE MTT-S International Microwave Symposium Digest, vol. III, Jun. 1-5, 1992. [Don W. Reid, Digest Editor].
Pozar, Microwave Engineering, Addison-Wesley, 1990, 608-609.
Raihn, et al., "Folded Dual-Mode HTS Microstrip Band Pass Filter", IEEE International Microwave Symposium, Jun. 2-7, 2002, Seattle, Washington, p. #.
Rouchaud, et al., "New Classes of Microstrip Resonators for HTS Microwave Filters Applications", IEEE Transactions On Microwave Theory & Techniques, MTT-S Digest, 1988, 1023-1026.
Sagawa, et al, "Miniaturized Hairpin Resonator Filters & Their Application to Receiver Front End MIC's", IEEE Transactions On Microwave Theory & Techniques, 37, 12, Dec. 1989, 1991-1997.
Schiffman, et al., "Exact Design Of Band-Stop Microwave Filters", IEEE Transactions On Microwave Theory & Techniques, MTT-12, 1, Jan. 1964, 6-15.
Schmidt, et al., Measured Performance at 77K Of Superconducting Microstrip Resonators & Filters, IEEE Transactions On Microwave & Theory & Technique, 39, 9, Sep. 1991, 1475-1479.
Schornstein, et al., "High Temperature Superconductor Shielded High Power Dielectric Dual Mode Filter For Applications In Satellite Communications", IEEE MTT-S International Microwave Symposium Digest, New York, NY, 3, 1998, 1319-1322.
Superconductor Technologies, "LNA Development Plan For The PCS Cooled LNA/HTS Filter Product", Jul. 31, 1995.
Superconductor Technologies, "Technical Proposal", Apr. 18, 1996.
Talisa, et al., "Low- and High- Temperature Superconducting Microwave Filters", IEEE Transactions On Microwave Theory and Techniques, 39, 9, Sep. 1991, 1448-1454.
Waegel, et al., "Slot Coupled Dual-Mode Batch Filters", Electronics Letters, 32, 10, May 9, 1996, 878-879.
Winter, "High Dielectric Constant Strip Line Band Pass Filters", IEEE Transactions on Microwave Theory and Techniques, 39, 12, Dec. 1991, 2182-2187.
Wu, et al., "Mode Chart for Microstrip Ring Resonators", IEEE Transactions on Microwave Theory and Techniques, Jul. 1973, 487-489.

Young, et al., "Microwave Band-Stop Filters With Narrow Stop Bands", IRE Transactions On Microwave Theory & Techniques, Nov. 1982, 416-427.
Zhu, et al., "New Planar Dual-Mode Filter Using Cross-Slotted Patch Resonator for Simultaneous Size and Less Reduction", IEEE Transactions on Microwave Theory and Techniques, 47, 5, May 1999, 650-654.

ART-UNIT: 2817

PRIMARY-EXAMINER: Lee; Benny T.

ATTY-AGENT-FIRM: O'Melveny & Myers LLP

ABSTRACT:

Novel structures and methods for forming useful high temperature superconducting devices, most particularly resonators, are provided. Structures resulting in reduced peak current densities relative to known structures achieve numerous desirable benefits, especially including the reduced intermodulation effects of earlier resonators. In one aspect of this invention, a spiral in, spiral out resonator is provided, characterized in that it has an odd number of long runs, at least equal to five long runs, where the long runs are connected by turns, and wherein there are at least two sequential turns of the same handedness, followed by at least two turns of the opposite handedness. In yet another aspect of this invention, it has been discovered that reducing the size of the input and output pads of HTS resonators increases the relative inductance compared to the capacitance. Yet another resonator structure is a spiral snake resonator having a terminal end disposed within the resonator. A wide in the middle structure and wide at peak current density resonator structures utilize enlarged width portions of the resonator in those areas where current density is largest. In yet another aspect of this invention, operation of resonators in high modes, above the fundamental mode, reduce peak current densities. Resonators operated in modes in which current in adjacent long runs are in the same direction further serve to reduce current densities, and intermodulation effects. Symmetric current structures and modes of operation are particularly advantageous where far field effects are compensated for.

19 Claims, 38 Drawing figures

☐ 3. Document ID: US 5328893 A Relevance Rank: 44

L1: Entry 16 of 21 File: USPT Jul 12, 1994

US-PAT-NO: 5328893
DOCUMENT-IDENTIFIER: US 5328893 A

TITLE: Superconducting devices having a variable conductivity device for introducing energy loss

DATE-ISSUED: July 12, 1994

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Sun; Jonathan Z.	Goleta	CA		
Hammond; Robert B.	Santa Barbara	CA		
Scalapino; Douglas J.	Santa Barbara	CA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Superconductor Technologies, Inc.	Santa Barbara	CA			02

APPL-NO: 07/719736 [PALM]
DATE FILED: June 24, 1991

INT-CL-ISSUED: [05] H01 L 39/00, H01 P 1/201

US-CL-ISSUED: 505/210; 505/700, 505/701, 505/866, 333/99S, 333/202, 333/204
US-CL-CURRENT: 505/210; 333/202, 333/204, 333/99S, 505/700, 505/701, 505/866

FIELD-OF-CLASSIFICATION-SEARCH: 333/99S, 333/161, 333/204, 333/219, 333/246, 505/1, 505/700, 505/701, 505/703, 505/866
See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
4876239	October 1989	Cachier	333/99S X
4912086	March 1990	Enz et al.	505/701 X
4990487	February 1991	Masumi	505/701 X
5097128	March 1997	Jack	505/866 X
5116807	May 1992	Romanofsky et al.	333/99S X

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	CLASS
174101	July 1989	JP	333/204
101801	April 1990	JP	333/204

OTHER PUBLICATIONS

Neikirk et al; "Optically-controlled Coplanar Waveguide Phase Shifters" Microwave Journal; Dec. 1989; pp. 77-88.
Glass, N. E., and Rogovin D.; "Optically Control of Microwave Propagation in Superconducting Devices"; Appl. Phys. Lett.; No. 54; 9 Jan. 1988, pp. 182-184.

ART-UNIT: 252

PRIMARY-EXAMINER: Lee; Benny T.

ATTY-AGENT-FIRM: Lyon & Lyon

ABSTRACT:

Active superconductive devices are formed having a variable conductive element in electromagnetic contact with a superconductor. In one embodiment, a variable ohmic conductive device, such as a photoconductor, is placed adjacent a superconductor. By varying the optical radiation on the photoconductor, the electromagnetic environment adjacent the superconductor is changed, resulting in changed electrical properties. The superconductor may be patterned as a reject filter, with a photoconductor forming a microwave switch. Alternatively, a delay line plus variable ohmic element forms a phase shifter.

11 Claims, 11 Drawing figures

☐ 4. Document ID: US 6178339 B1 Relevance Rank: 44

L1: Entry 7 of 21 File: USPT Jan 23, 2001

US-PAT-NO: 6178339
DOCUMENT-IDENTIFIER: US 6178339 B1

TITLE: Wireless communication filter operating at low temperature

DATE-ISSUED: January 23, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Sakai; Masahiro	Osaka			JP
Higashino; Hidetaka	Kyoto			JP
Setsune; Kentaro	Osaka			JP

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Matsushita Electric Industrial Co., Ltd.	Osaka			JP	03

APPL-NO: 08/629349 [PALM]
DATE FILED: April 8, 1996

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	7-085707	April 11, 1995
JP	7-092584	April 18, 1995
JP	7-127712	May 26, 1995
JP	7-136525	June 2, 1995
JP	7-136526	June 2, 1995

INT-CL-ISSUED: [07] H01 P 1/213, H01 B 12/02

US-CL-ISSUED: 505/210; 505/700, 505/701, 505/866, 333/99.005, 333/126, 333/134, 333/202, 333/204, 333/260
US-CL-CURRENT: 505/210; 333/126, 333/134, 333/202, 333/204, 333/260, 333/99S, 505/700, 505/701, 505/866

FIELD-OF-CLASSIFICATION-SEARCH: 333/995, 333/202, 333/204, 333/205, 333/260, 333/126, 333/129, 333/134, 333/136, 505/210, 505/202, 505/700, 505/701, 505/706, 505/866
See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
3857114	December 1974	Minet et al.	505/866 X
4487999	December 1984	Baird et al.	333/260 X
4528530	July 1985	Ketchen	505/866 X
5179074	January 1993	Fiedziuszko et al.	505/210
5244869	September 1993	Billing	505/202
5489880	February 1996	Swarup	333/204 X

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	CLASS
2-60203	February 1990	JP	333/127
31502	February 1990	JP	505/866
5198433	August 1993	JP	

OTHER PUBLICATIONS

R. Babbitt et al., "Fabrication and Evaluation of Superconducting Devices", Microwave Journal, vol. 34, No. 4, Apr. 1991, pp. 40 ff.
Raafat R. Mansour, "Design of Superconductive Multiplexers Using Single-Mode and Dual-Mode Filters", IEEE Transactions on Microwave Theory and Techniques, vol. 42, No. 7, pp. 1411-1418, Jul. 1994.
Communication from European Patent Office and attached Search Report, Jan. 1998.

ART-UNIT: 287

PRIMARY-EXAMINER: Lee; Benny T.

ATTY-AGENT-FIRM: Merchant & Gould P.C.

ABSTRACT:

A high power filter apparatus which is used in a mobile communication base station or the like is provided wherein the temperature stability and frequency selection are excellent, an insertion loss is small, the size is small, power consumption is low and costs are low. A shield case block comprises signal input and output portions, and a plurality of closed spaces which house a filter element connected

between the signal input and output portions. A cooling plate is provide in a heat insulating container which houses the shield case block. The shield case block is fixed to the cooling plate in the thermal contact state. Each filter element is place almost in parallel. A cylindrical hole having an axis which is almost parallel with the face of the filter element penetrates the shield case block. A ground rod made of a conductor which changes the volume of the closed space is provided on the inner end portion of a movable member which moves in the axial direction of the cylindrical hole.

12 Claims, 14 Drawing figures

☐ 5. Document ID: US 4918050 A Relevance Rank: 43

L1: Entry 20 of 21 File: USPT Apr 17, 1990

US-PAT-NO: 4918050
DOCUMENT-IDENTIFIER: US 4918050 A

TITLE: Reduced size superconducting resonator including high temperature superconductor

DATE-ISSUED: April 17, 1990

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Dworsky; Lawrence	Northbrook	IL		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Motorola, Inc.	Schaumburg	IL			02

APPL-NO: 07/177296 [PALM]
DATE FILED: April 4, 1988

INT-CL-ISSUED: [04] H01 P 1/203, H01 P 7/08

US-CL-ISSUED: 505/1; 505/701, 505/866, 333/995, 333/219, 333/204
US-CL-CURRENT: 505/210; 333/204, 333/219, 333/99S, 505/701, 505/866

FIELD-OF-CLASSIFICATION-SEARCH: 333/219, 333/204, 333/995, 505/1, 505/866, 505/856, 505/700-704
See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL

3857114	December 1974	Minet et al.	333/204 X
4523162	June 1985	Johnson	333/202
4609892	September 1986	Higgins, Jr.	333/204
4701727	October 1987	Wong	333/204

OTHER PUBLICATIONS

Vendik, O. G. et al., "Superconducting-Film Stripline Filter"; Soviet Tech. Phys. Letters; vol. 7 (6); Jun. 1981; pp. 316, 317.
DiNardo, A. J. et al.; "Superconducting Microstrip Hi-Q Microwave Resonators"; Journal of Applied Physics; vol. 42, No. 1; Jan. 1971; pp. 186-189.
Kwon, O. K. et al.; "Superconductors as Very High Speed System Level Interconnects"; IEEE Electron Devices Letter; vol. EDL-8, No. 12; Dec. 1987; pp. 582-585.
Henkels, W. H. et al.; "Penetration Depth Measurements on Type II Superconducting Films"; IEEE Transactions on Magnetics; vol. MAG-13, No. 1; Jan. 1977; pp. 63-66.
O. K. Kwon, B. W. Langley, R. F. W. Pease, and M. R. Beasley, "Superconductors as Very High Speed System-Level Interconnects", Semiconductor Research Corporation, private communication, Sep. 15, 1987, 15 pages.
Lexis/Nexis, Darrel Whitten of Prudential-Bache Securities, "International Symposium on Superconducting Materials", Mar. 21, 1987, one page.
Lexis/Nexis bis Informat Newsfile, "Japan-Toshiba Announces First Superconductive Wire", International Herald Tribune, Apr. 3, 1987, p. 17.
N. H. Meyers, "Inductance in Thin-Film Superconducting Structures", Proceedings of the IRE, Nov. 1961, pp. 1640-1649.
T. B. Gheewala, "Desing of 2.5 um CIL Circuits", IBM J. Res. Develop., vol. 24, No. 2, Mar. 1980, pp. 132-133.
O. K. Kwon, S. Y. Chou, R. F. W. Pease, and B. A. Auld, "An Accurate Transmission Line Model of Superconducting Interconnects for Very High Speed System-Level Packaging", SRC #85-10-064, IEEE VISI 7 GAAS Packaging Workshop, Sep. 1987, pp. 34-35.
S. Sridhar, "Microwave Technology and Materials Report", Microwave Journal, Jun. 1987, pp. 117-123.
J. C. Swihart, "Field Solution for a Thin-Film Superconducting Strip Transmission Line", Journal of Applied Physics, vol. 32, #3, Mar. 1961, pp. 461-469.

ART-UNIT: 252

PRIMARY-EXAMINER: Laroche; Eugene R.

ASSISTANT-EXAMINER: Lee; Benny T.

ATTY-AGENT-FIRM: Krause; Joseph P. Parmelee; Steven G.

ABSTRACT:

An arrangement for a superconducting resonator suitable for use in electronic filters is disclosed, in which a resonator exhibits an increased amount of internal inductance without a lengthening of the resonator. By utilizing a relatively thin dielectric material, a significant amount of magnetic field is made to exist in a layer of the superconductors nearest to the dielectric. This magnetic field induces a non-negligible internal inductance within the layer. The net result of having this extra inductance is that the wave velocity is no longer a constant, independent of dielectric thickness. Thus the resonator can be constructed to be significantly shorter than the conventional wave velocity equation would imply. Hence, the present invention provides a reduction in the length as well as in the cross-sectional area of a resonator, which means that one or more of such

resonators may then be advantageously utilized to achieve significantly reduced filter size.

17 Claims, 8 Drawing figures

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KMC | Draw D.

☐ 6. Document ID: US 5616538 A Relevance Rank: 43

L1: Entry 14 of 21 File: USPT Apr 1, 1997

US-PAT-NO: 5616538
DOCUMENT-IDENTIFIER: US 5616538 A

TITLE: High temperature superconductor staggered resonator array bandpass filter

DATE-ISSUED: April 1, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hey-Shipton; Gregory L.	Santa Barbara	CA		
Matthaei; George L.	Santa Barbara	CA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Superconductor Technologies, Inc.	Santa Barbara	CA			02

APPL-NO: 08/254313 [PALM]
DATE FILED: June 6, 1994

INT-CL-ISSUED: [06] H01 P 1/203, H01 B 12/06

US-CL-ISSUED: 505/210; 505/700, 505/701, 505/866, 333/99S, 333/204, 333/205
US-CL-CURRENT: 505/210; 333/204, 333/205, 333/99S, 505/700, 505/701, 505/866

FIELD-OF-CLASSIFICATION-SEARCH: 333/204, 333/205, 333/99S, 505/210, 505/700, 505/701, 505/866
See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
3925740	December 1975	Steensma	333/226 X
4701727	October 1987	Wong	333/204
5066933	November 1991	Komeda	333/204
5231078	July 1993	Reibman et al.	333/175 X

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	CLASS
19301	January 1985	JP	333/204
220602	November 1985	JP	333/204
254501	November 1987	JP	333/204
1709438	January 1992	RU	333/204
572865	September 1977	SU	333/204
1224862	April 1986	SU	333/204
1277256	December 1986	SU	333/204
1385165	March 1988	SU	333/204
1541690	February 1990	SU	333/204

OTHER PUBLICATIONS

Winter, Frederick J., "High Dielectric Constant Strip Line Band Pass Filters," IEEE Transactions on Microwave Theory and Techniques, vol. 39, No. 12, Dec., 1991, pp. 2182-2187.

Matthaei, G.L. et al, "High Temperature Superconducting 8.45 GHz Bandpass Filter for the Deep Space Network," 1993 IEEE MTT-5 International Symposium Digest, Jun. 14-18, 1993, Atlanta, Georgia, pp. 1273-1276.

Howe, Harlan, Jr., "Stripline Circuit Design," Archtech House, Inc., 1974, pp. 216-217.

Levy, R., "Three-Wire-Line Interdigital Filters of chebyshev and Elliptic-Function Characteristic for Broad Bandwidths," Electronic Letters, vol. 2, Dec. 2, 1966, pp. 13-14.

Schmidt, Michael et al, "Measured Performance at 77K of Superconducting Microstrip Resonators and Filters," IEEE Transactions on Microwave Theory and Technical Techniques, vol. 39, No. 9, Sep. 1991, pp. 1475-1478.

Talisa, Salvador H. et al, "Low-and High-Temperature Superconducting Microwave Filters," IEEE Transactions on Microwave Theory and Techniques, vol. 39, No. 9, Sep. 1991, pp. 1448-1454.

ART-UNIT: 252

PRIMARY-EXAMINER: Lee; Benny T.

ATTY-AGENT-FIRM: Lyon & Lyon

ABSTRACT:

A bandpass filter comprises multiple side-coupled strip line resonators wherein the resonators are staggered or offset with respect to their nearest neighbors by substantially 1/4 wavelength or less. In the preferred embodiment, the strip line bandpass filter structure has substantially parallel resonators arrayed with substantially constant spacing between the resonators with 1/4 wavelength overlap or less. Generally, the amount of stagger between nearest neighbors is reduced for resonators toward the center of the filter. Coupling between resonators is controlled by varying the relative amount of stagger between resonators. The resonators may be formed from normal metal or superconducting materials, such as YBCO or thallium containing superconductors. A strip line structure may be formed by utilizing two mirror structures each comprising a substrate having a ground plane and a patterned staggered resonator array formed on the substrate on a side opposite the ground plane. In another aspect of this invention, a ground plane

tuning system utilizes a variable positioning member. The member is moveable towards and away from the resonator array, resulting in tuning. In the preferred embodiment, a threaded plug mates with a threaded housing opening, permitting tuning by rotation of the insert.

3 Claims, 16 Drawing figures

☐ 7. Document ID: US 5804534 A Relevance Rank: 43

L1: Entry 13 of 21 File: USPT Sep 8, 1998

US-PAT-NO: 5804534
DOCUMENT-IDENTIFIER: US 5804534 A

TITLE: High performance dual mode microwave filter with cavity and conducting or superconducting loading element

DATE-ISSUED: September 8, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Zaki; Kawthar Abdelhamid	Potomac	MD		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
University of Maryland	College Park	MD			02

APPL-NO: 08/633705 [PALM]
DATE FILED: April 19, 1996

INT-CL-ISSUED: [06] H01 P 1/201, H01 B 12/02

US-CL-ISSUED: 505/210; 505/700, 505/866, 333/202, 333/212, 333/99.005
US-CL-CURRENT: 505/210; 333/202, 333/212, 333/99S, 505/700, 505/866

FIELD-OF-CLASSIFICATION-SEARCH: 333/202, 333/219, 333/212, 333/209, 333/230, 333/995, 505/210, 505/700, 505/701, 505/866
See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
3697898	October 1972	Blachier et al.	333/21A
3969682	July 1976	Rossum	330/85
4019161	April 1977	Kimura et al.	

4135133	January 1979	Mok	
4142164	February 1979	Nishikawa et al.	
4143344	March 1979	Nishikawa et al.	333/202
4180787	December 1979	Pfitzenmaier	333/212
4184130	January 1980	Nishikawa et al.	333/206
4241322	December 1980	Johnson et al.	333/202
4410865	October 1983	Young et al.	333/208
4453146	June 1984	Fiedziuszko	333/212
4488132	December 1984	Collins et al.	333/229
4489293	December 1984	Fiedziuszko	333/202
4513264	April 1985	Dorey et al.	333/212
4544901	October 1985	Rhodes et al.	333/212
4571563	February 1986	Cameron	333/212
4652591	March 1987	Londrigan	
4652843	March 1987	Tang et al.	333/212
4652844	March 1987	Brambilla	333/212
4675630	June 1987	Tang et al.	333/208
4721933	January 1988	Schwartz et al.	333/212
4736173	April 1988	Basil, Jr. et al.	333/229
4996188	February 1991	Kommrusch	333/202 X
5012211	April 1991	Young et al.	333/212
5083102	January 1992	Zaki	333/212
5179074	January 1993	Friedziuszko et al.	333/202 X
5268659	December 1993	Zaki et al.	333/209
5391543	February 1995	Higaki et al.	505/210
5459123	October 1995	Das	333/212

OTHER PUBLICATIONS

Robert E. Collin, "Field Theory of Guided Waves", McGraw-Hill Book Company, Inc. pp. 289 & 525 Copyright 1960.

ART-UNIT: 252

PRIMARY-EXAMINER: Lee; Benny T.

ATTY-AGENT-FIRM: Nikaido, Marmelstein, Murray & Oram LLP

ABSTRACT:

A microwave filter has at least one resonator with a cavity and a conducting or superconducting loading element inside the cavity. The resonator also has first and second tuning screws at right angles and a mode coupling screw at 45.degree. angles to both tuning screws. This filter can achieve a high Q in a small size.

16 Claims, 16 Drawing figures

☐ 8. Document ID: US 5847627 A Relevance Rank: 43

L1: Entry 12 of 21 File: USPT Dec 8, 1998

US-PAT-NO: 5847627
DOCUMENT-IDENTIFIER: US 5847627 A
** See image for Certificate of Correction **

TITLE: Bandstop filter coupling tuner

DATE-ISSUED: December 8, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Radzikowski; Piotr O.	Chicago	IL		
Clermont; Craig R.	Round Lake Beach	IL		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Illinois Superconductor Corporation	Mt. Prospect	IL			02

APPL-NO: 08/706637 [PALM]
DATE FILED: September 18, 1996

INT-CL-ISSUED: [06] H01 P 1/201

US-CL-ISSUED: 333/202; 333/219, 333/230, 333/99.005, 505/210, 505/700, 505/866
US-CL-CURRENT: 333/202; 333/219, 333/230, 333/99S, 505/210, 505/700, 505/866

FIELD-OF-CLASSIFICATION-SEARCH: 333/203, 333/219, 333/219.1, 333/230, 333/202, 333/22DR, 333/22HC, 505/210, 505/700, 505/866
See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
3098206	July 1963	Moulton	333/202
3896400	July 1975	Hyde	333/21R
4019161	April 1977	Kimura et al.	333/234
4028652	June 1977	Wakino et la.	333/202
4060779	November 1977	Atia et al.	333/212
4135133	January 1979	Mok	333/209
4142164	February 1979	Nishikawa et al.	333/219.1
4143344	March 1979	Nishikawa et al.	333/202
4489293	December 1984	Fiedziuszko	333/202
4540955	September 1985	Fiedziuszko	331/107DP
4551694	November 1985	Biehl et al.	333/24C

4652843	March 1987	Tang et al.	333/212
4652844	March 1987	Brambilla	333/212
4675630	June 1987	Tang et al.	333/208
4692723	September 1987	Fiedziuszko et al.	333/202
4721933	January 1988	Schwartz et al.	333/212
5083102	January 1992	Zaki	333/212
5184098	February 1993	Kich et al.	333/208
5191304	March 1993	Jachowski	333/245 X
5200721	April 1993	Mansour	333/202
5268659	December 1993	Zaki et al.	333/209
5285178	February 1994	Ahlberg	333/224
5373270	December 1994	Blair et al.	333/235 X
5391543	February 1995	Higaki et al.	505/210
5495216	February 1996	Jachowski	333/208
5608363	March 1997	Cameron et al.	333/230 X

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	CLASS
209878	January 1987	EP	333/202DR
0 713 238 A1	May 1996	EP	333/202DR
284101	November 1989	JP	333/202DR
3254501	November 1991	JP	

OTHER PUBLICATIONS

PCT International Search Report of International Application No. PCT/US97/13890.
Patent Abstract for the European Patent Office of Japanese Publication No. 56076605, Publication Date 24, Jun. 1981.

ART-UNIT: 287

PRIMARY-EXAMINER: Lee; Benny

ATTY-AGENT-FIRM: Marshall, O'Toole, Gerstein, Murray & Borun

ABSTRACT:

A resonant structure and filter include a resonant element mounted to the cover of a housing. A transmission line passes through the cover and is connected to a coupling loop. The coupling loop is located adjacent the resonator and is connected to ground. A coupling tuner is attached to the housing and includes a post which is movably attached to the housing. The tuner extends between the coupling loop and the resonator, and may be adjusted to change the electromagnetic coupling.

19 Claims, 7 Drawing figures

☐ 9. Document ID: US 6016434 A Relevance Rank: 43

L1: Entry 11 of 21 File: USPT Jan 18, 2000

US-PAT-NO: 6016434
DOCUMENT-IDENTIFIER: US 6016434 A

TITLE: High-frequency circuit element in which a resonator and input/ouputs are relatively movable

DATE-ISSUED: January 18, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mizuno; Koichi	Nara			JP
Enokihara; Akira	Nara			JP
Higashino; Hidetaka	Kyoto			JP
Setsune; Kentaro	Osaka			JP

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Matsushita Electric Industrial Co., Ltd.	Osaka			JP	03

APPL-NO: 08/765587 [PALM]
DATE FILED: December 17, 1996

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	6-135622	June 17, 1994

PCT-DATA:

APPL-NO	DATE-FILED	PUB-NO	PUB-DATE	371-DATE
PCT/JP95/01168	June 9, 1995	WO95/35584	Dec 28, 1995	Dec 17, 1996

INT-CL-ISSUED: [06] H01 P 7/08

US-CL-ISSUED: 505/210; 505/700, 505/701, 505/866, 333/219, 333/235, 333/99S
US-CL-CURRENT: 505/210; 333/219, 333/235, 333/99S, 505/700, 505/701, 505/866

FIELD-OF-CLASSIFICATION-SEARCH: 333/204, 333/205, 333/219, 333/235, 333/995, 505/210, 505/700, 505/701, 505/866
See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
3117379	January 1964	Ayer	333/246 X

3278864	October 1966	Butler	333/111
5136268	August 1992	Fiedziuszko et al.	333/204
5391543	February 1995	Higaki elt al.	505/210

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	CLASS
0 516 440	May 1992	EP	333/205
0 509 636	October 1992	EP	333/204
0 522 515	January 1993	EP	333/219
0 597 700	November 1993	EP	333/204
49-39542	October 1974	JP	
49-122251	November 1974	JP	
50-16454	February 1975	JP	
51-18454	February 1976	JP	
61-251203	November 1986	JP	
160801	July 1987	JP	
63-299010	December 1988	JP	
2-17701	January 1990	JP	
4287404	October 1992	JP	
4339403	November 1992	JP	
4-368006	December 1992	JP	
5-199024	August 1993	JP	
5-251904	September 1993	JP	
5-267908	October 1993	JP	
5-299914	November 1993	JP	
6-37513	February 1994	JP	
6-112701	April 1994	JP	
1688316	October 1991	SU	

OTHER PUBLICATIONS

Curtis, J.A. et al; "Dual Mode Microstrip Filters"; Applied Microwave; Fall 1991; pp. 86-93.
Yashuhiro Nagai et al., "Properties of Disk Resonators and End-Coupled Disk Filters with Superconducting Films", Japanese Journal of Applied Phusics, vol. 32, No. 12A (Dec. 1993), pp. 5527-5531.

ART-UNIT: 287

PRIMARY-EXAMINER: Lee; Benny T.

ATTY-AGENT-FIRM: Merchant & Gould, P.C.

ABSTRACT:

In a small transmission line type high-frequency circuit element that has small loss due to conductor resistance and has a high Q value, an error in the dimension of a pattern, etc. can be corrected to adjust element characteristics. An

elliptical shape resonator (12) that is formed of an electric conductor is formed on a substrate (11a), while a pair of input-output terminals (13) are formed on a substrate (11b). Substrate (11a) on which resonator (12) is formed and substrate (11b) on which input-output terminal (13) is formed are located parallel to each other, with a surface on which resonator (12) is formed and a surface on which input-output terminal (13) is formed being opposed. Substrates (11a) and (11b) that are located parallel to each other are relatively moved by a mechanical mechanism that uses a screw and moves slightly. Also, substrate (11a) is rotated by the mechanical mechanism that uses a screw and moves slightly around the center axis of resonator (12) as a rotation axis (18).

9 Claims, 11 Drawing figures

☐ 10. Document ID: US 6026311 A Relevance Rank: 43

L1: Entry 9 of 21 File: USPT Feb 15, 2000

US-PAT-NO: 6026311
DOCUMENT-IDENTIFIER: US 6026311 A

TITLE: High temperature superconducting structures and methods for high Q, reduced intermodulation resonators and filters

DATE-ISSUED: February 15, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Willemsen Cortes; Balam Quitze Andre	Ventura	CA		
Cardona; Albert H.	Santa Barbara	CA		
Fenzi; Neal O.	Santa Barbara	CA		
Forse; Roger J.	Santa Barbara	CA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Superconductor Technologies, Inc.	Santa Barbara	CA			02

APPL-NO: 08/885473 [PALM]
DATE FILED: June 30, 1997

PARENT-CASE:
RELATED APPLICATION This application is a continuation-in-part application of application Ser. No. 08/826,435 (224/302), filed Mar. 20, 1997, now abandoned, which is a continuation of application Ser. No. 08/297,298, filed Aug. 26, 1994, entitled "Lumped Element Filters", issued as U.S. Pat. No. 5,616,539, which is in turn a continuation-in-part of application Ser. No. 08/070,100 filed May 28, 1993, entitled "High Temperature Superconductor Lumped Elements and Circuits Therefrom" (as amended), issued as U.S. Pat. No. 5,618,777 on Apr. 8, 1997 (now continued as application Ser. No. 08/821,239, entitled "Lumped Element Circuits", filed Mar. 20, 1997 now abandoned), incorporated herein by reference as if fully set forth herein.

INT-CL-ISSUED: [07] H01 P 7/00, H01 B 12/02

US-CL-ISSUED: 505/210; 505/700, 505/701, 505/866, 333/99S, 333/219, 333/185, 336/200, 336/DIG.1
US-CL-CURRENT: 505/210; 333/185, 333/219, 333/99S, 336/200, 336/DIG.1, 505/700, 505/701, 505/866

FIELD-OF-CLASSIFICATION-SEARCH: 333/175, 333/185, 333/219, 333/99S, 336/200, 336/232, 336/DIG.1, 505/210, 505/700, 505/701, 505/705, 505/866
See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
4075591	February 1978	Haas	336/200
4999597	March 1991	Gaynor	333/246
5231078	July 1993	Riebman et al.	333/175 X
5521568	May 1996	Wu et al.	336/232 X
5616538	April 1997	Hey-Shipton et al.	505/210
5616539	April 1997	Hey-Shipton et al.	505/210
5618777	April 1997	Hey-Shipton et al.	505/210
5679624	October 1997	Das	505/700 X

ART-UNIT: 287

PRIMARY-EXAMINER: Lee; Benny T.

ATTY-AGENT-FIRM: Lyon & Lyon LLP

ABSTRACT:

Novel structures and methods for forming useful high temperature superconducting devices, most particularly resonators, are provided. Structures resulting in reduced peak current densities relative to known structures achieve numerous desirable benefits, especially including the reduced intermodulation effects of earlier resonators. In one aspect of this invention, a spiral in, spiral out resonator is provided, characterized in that it has an odd number of long runs, at least equal to five long runs, where the long runs are connected by turns, and wherein there are at least two sequential turns of the same handedness, followed by at least two turns of the opposite handedness. In yet another aspect of this invention, it has been discovered that reducing the size of the input and output pads of HTS resonators increases the relative inductance compared to the capacitance. Yet another resonator structure is a spiral snake resonator having a terminal end disposed within the resonator. A wide in the middle structure and wide at peak current density resonator structures utilize enlarged width portions of the resonator in those areas where current density is largest. In yet another aspect of this invention, operation of resonators in high modes, above the fundamental mode, reduce peak current densities. Resonators operated in modes in which current in adjacent long runs are in the same direction further serve to reduce current densities, and intermodulation effects. Symmetric current structures and modes of operation are particularly advantageous where far field effects are compensated

for.

25 Claims, 35 Drawing figures

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw D

☐ 11. Document ID: US 6360111 B1 Relevance Rank: 43

L1: Entry 6 of 21 File: USPT Mar 19, 2002

US-PAT-NO: 6360111
DOCUMENT-IDENTIFIER: US 6360111 B1
**** See image for Certificate of Correction ****

TITLE: High-frequency circuit element having a superconductive resonator with an electroconductive film about the periphery

DATE-ISSUED: March 19, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mizuno; Koichi	Nara			JP
Enokihara; Akira	Nara			JP
Higashino; Hidetaka	Kyoto			JP
Setsune; Kentaro	Osaka			JP

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Matsushita electric Industrial Co., Ltd.	Osaka			JP	03

APPL-NO: 09/415117 [PALM]
DATE FILED: October 8, 1999

PARENT-CASE:
This application is a Divisional of application Ser. No. 08/765,587, filed Dec. 17, 1996, now U.S. Pat. No. 6,016,434, which is a 371 of PCT/JP95/01168, filed Jun. 9, 1995, which application(s) are incorporated herein by reference.

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	6-135622	June 17, 1994

INT-CL-ISSUED: [07] H01 P 7/08, H01 B 12/02

US-CL-ISSUED: 505/210; 333/99.005, 333/219, 505/700, 505/701, 505/866
US-CL-CURRENT: 505/210; 333/219, 333/99S, 505/700, 505/701, 505/866

FIELD-OF-CLASSIFICATION-SEARCH: 333/204, 333/219, 333/995, 505/210, 505/700, 505/701, 505/866
See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
3117379	January 1964	Ayer	
3278864	October 1966	Butler	
3639857	February 1972	Okoshi et al.	
5136268	August 1992	Fiedziuszko et al.	
5172084	December 1992	Fiedziuszko et al.	
5391543	February 1995	Higaki et al.	
5484764	January 1996	Fiedziuszko et al.	333/202
6016434	January 2000	Mizuno et al.	
6239674	May 2001	Enokihara et al.	333/204

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	CLASS
0 516 440	May 1992	EP	
0 509 636	October 1992	EP	
0 522 515	January 1993	EP	
0 597 700	November 1993	EP	
49-39542	October 1974	JP	
49-122251	November 1974	JP	
50-16454	February 1975	JP	
51-18454	February 1976	JP	
61-251203	November 1986	JP	
1-60801	July 1987	JP	
63-299010	December 1988	JP	
217701	January 1990	JP	
2-17701	January 1990	JP	
4-339403	November 1992	JP	
4-368006	December 1992	JP	
5-199024	August 1993	JP	
5-251904	September 1993	JP	
5-267908	October 1993	JP	
5-299914	November 1993	JP	
6-37513	February 1994	JP	
6-112701	April 1994	JP	
4097602	March 1997	JP	
4287404	October 1997	JP	
1 688 316	October 1991	SU	

OTHER PUBLICATIONS

Yasuhiro Nagai et al., "Properties of Disk Resonators and End--Coupled Disk Filters with Superconducting Films", Japanese Journal of Applied Phusics, vol. 32, No. 12A

(Dec. 1993), pp. 5527-5531.
Communication from European Patent Office, European Search Report and Annexes.
J.A. Curtis et al., "Dual Mode Microstrip Filters" Applied Microwave, pp. 86-93.
Woiff, I "Microstrip bandpass filter using degenerate modes of a microstrip ring resonator" Electronics letter, vol. 8 No. 12, Jun. 15, 1972. pp 302-303.
S. Long et al. "The impedance of an elliptical printed-circuit antenna" Dept. Electrical Engineering University of Houston, Texas 77004, 1981 pp. 355-358.

ART-UNIT: 2817

PRIMARY-EXAMINER: Lee; Benny T.

ATTY-AGENT-FIRM: Merchant & Gould PC

ABSTRACT:

In a small transmission line type high-frequency circuit element that has small loss due to conductor resistance and has a high Q value, an error in the dimension of a pattern, etc. can be corrected to adjust element characteristics. An elliptical shape resonator (12) that is formed of an electric conductor is formed on a substrate (11a), while a pair of input-output terminals (13) are formed on a substrate (11b). Substrate (11a) on which resonator (12) is formed and substrate (11b) on which input-output terminal (13) is formed are located parallel to each other, with a surface on which resonator (12) is formed and a surface on which input-output terminal (13) is formed being opposed. Substrates (11a) and (11b) that are located parallel to each other are relatively moved by a mechanical mechanism that uses a screw and moves slightly. Also, substrate (11a) is rotated by the mechanical mechanism that uses a screw and moves slightly around the center axis of resonator (12) as a rotation axis (18).

7 Claims, 11 Drawing figures

☐ 12. Document ID: US 6424846 B1 Relevance Rank: 43

L1: Entry 5 of 21 File: USPT Jul 23, 2002

US-PAT-NO: 6424846
DOCUMENT-IDENTIFIER: US 6424846 B1

TITLE: Spiral snake high temperature superconducting resonator for high Q, reduced intermodulation

DATE-ISSUED: July 23, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Cortes; Balam Quitze Andres Willemsen	Ventura	CA		
Cardona; Albert H.	Santa Barbara	CA		
Fenzi; Neal O.	Santa Barbara	CA		

Forse; Roger J. Santa Barbara CA

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Superconductor Technologies, Inc.	Santa Barbara	CA			02

APPL-NO: 09/460274 [PALM]
DATE FILED: December 13, 1999

PARENT-CASE:
RELATED APPLICATION This application is a continuation application of application Ser. No. 08/885,473, filed on Jun. 30, 1997, now U.S. Pat. No. 6,026,311, which is a continuation-in-part of application Ser. No. 08/826,435 filed on Mar. 20, 1997, now abandoned, which is a continuation-in-part of application Ser. No. 07/297,298, filed Aug. 26, 1994, now U.S. Pat. No. 5,616,539, which is a continuation-in-part of application Ser. No. 08/070,100, filed May 28, 1993, now U.S. Pat. No. 5,618,777.

INT-CL-ISSUED: [07] H01 P 7/00, H01 B 12/02

US-CL-ISSUED: 505/210; 505/700, 505/701, 505/866, 333/99.005, 333/219, 333/185, 336/200, 336/DIG.1
US-CL-CURRENT: 505/210; 333/185, 333/219, 333/99S, 336/200, 336/DIG.1, 505/700, 505/701, 505/866

FIELD-OF-CLASSIFICATION-SEARCH: 333/219, 333/185, 333/995, 333/175, 336/200, 336/232, 336/DIG.1, 505/210, 505/700, 505/701, 505/705, 505/866
See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
4981838	January 1991	Whitehead	333/219 X
5132650	July 1992	Ikeda	333/185 X
5532656	July 1996	Yoshimura	333/185
5699025	December 1997	Kanoh et al.	333/185 X
5955931	September 1999	Kaneko et al.	333/185 X
6026311	February 2000	Cortes et al.	333/219 X
6122533	September 2000	Zhang et al.	505/210

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	CLASS
2629685	January 1978	DE	333/185

ART-UNIT: 2817

PRIMARY-EXAMINER: Lee; Benny T.

ATTY-AGENT-FIRM: Lyon & Lyon LLP

ABSTRACT:

Novel structures and methods for forming useful high temperature superconducting devices, most particularly resonators, are provided. Structures resulting in reduced peak current densities relative to known structures achieve numerous desirable benefits, especially including the reduced intermodulation effects of earlier resonators. In one aspect of this invention, a spiral in, spiral out resonator is provided, characterized in that it has an odd number of long runs, at least equal to five long runs, where the long runs are connected by turns, and wherein there are at least two sequential turns of the same handedness, followed by at least two turns of the opposite handedness. In yet another aspect of this invention, it has been discovered that reducing the size of the input and output pads of HTS resonators increases the relative inductance compared to the capacitance. Yet another resonator structure is a spiral snake resonator having a terminal end disposed within the resonator. A wide in the middle structure and wide at peak current density resonator structures utilize enlarged width portions of the resonator in those areas where current density is largest. In yet another aspect of this invention, operation of resonators in high modes, above the fundamental mode, reduce peak current densities. Resonators operated in modes in which current in adjacent long runs are in the same direction further serve to reduce current densities, and intermodulation effects. Symmetric current structures and modes of operation are particularly advantageous where far field effects are compensated for.

36 Claims, 38 Drawing figures

☐ 13. Document ID: US 4981838 A Relevance Rank: 43

L1: Entry 19 of 21 File: USPT Jan 1, 1991

US-PAT-NO: 4981838
DOCUMENT-IDENTIFIER: US 4981838 A

TITLE: Superconducting alternating winding capacitor electromagnetic resonator

DATE-ISSUED: January 1, 1991

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Whitehead; Lorne A.	Vancouver			CA

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
The University of British Columbia	Vancouver			CA	03

APPL-NO: 07/309337 [PALM]